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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,323	01/16/2004	Roger L. Poe	506419-0071	8368

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EXAMINER

COCKS, JOSIAH C

ART UNIT	PAPER NUMBER
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3749

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/759,323	<b>Applicant(s)</b> POE ET AL.	
	<b>Examiner</b> Josiah Cocks	<b>Art Unit</b> 3749	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-54 and 106-108 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-54 and 106-108 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

1. Receipt of applicant's amendment filed 1/23/2006 is acknowledged.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 4, and 6-27, and 106-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 38 11 477 ("477 patent") (cited by applicant) in view of and U.S. Patent No. 4,457,704 to Sommers et al. ("Sommers").

The '477 patent discloses a compound venturi structure and burner assembly similar to that described in applicant's claims 1, 4, and 6-27, and 106-108. In particular, the '477 patent shows a burner assembly including a venturi cluster with at least six venturis (1, see Fig. 5) with bell shaped inlets (3), a collector (2) having an inlet end in fluid communication with the outlets of the venturis whereby fuel and induced air are intermixed to form a single stream. The '477 patent further discloses that the venturis are arranged as parallel tubes (see Fig. 3), and the collector (2) includes a burner tip (10) wherein the fuel and air mixture enters the combustion zone in an axial direction relative to the tip (see Fig. 5). The embodiment shown in Figures 3 and 4 illustrates a central fuel tube supplied to the collector (2) and burner tip (10).

The '477 patent possibly does not disclose the creation of an ultra-lean fuel mixture.

Sommers teaches a fluid fuel fired burner in the same field of endeavor as applicant's invention and the '477 patent. In Sommers, the burner includes a central fuel supply tube and nozzle (see Fig. 1) and venturi mixing device (3). The fuel mixture created by the mixing device as super-stoichiometric (i.e. having excess air and thus considered ultra fuel-lean), which desirably serves to reduce the NO<sub>x</sub> content of the combustion gases (see abstract and col. 3, lines 31-46).

In regard to at least claim 106, Sommers clearly provides that the all the combustion air is mixed with the fuel prior to combustion (see at least col. 2, lines 4-5 and col. 4, lines 49-58).

In regard to claims 107 and 108, the examiner notes that Sommers expressly recognizes that the air coefficient, which is understood to be the ratio amount of combustion air provided to the theoretical air necessary, is adjustable (see at least col. 4, lines 66-68) based, at least in part, on the caloric value of the fuel employed. A person of ordinary skill in the art would reasonably

Art Unit: 3749

consider that, in order to achieve optimum combustion and utilization of the heat content of the fuel while minimizing NO<sub>x</sub> production (see Sommers, col. 2, lines 31-39), a person of ordinary skill would select an appropriate amount of excess combustion air to produce a feed stream that is sufficiently fuel lean to be considered the “ultra fuel lean” as recited in applicant’s claims. Accordingly, the selection of specific percentage of fuel for the ultra fuel lean mixture (i.e. 55% of the total fuel to be combusted) is considered to be simply a matter of optimizing the prior art obtainable through routine experimentation. Such optimization is not regarded as being patentably distinct. See MPEP 2144.05(II)(A).

Therefore, in regard to claims 1, 4, and 6-27, and 106-108, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the burner of the ‘477 patent to incorporate producing a fuel lean mixture as taught by Sommers to desirably reduce the NO<sub>x</sub> content of the burner waste gas (see Sommers, col. 3, lines 31-36).

5. Claims 2, 3, 5, and 28-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ‘477 patent in view of Sommers as applied to claim 1 and 21 above, and further in view of U.S. Patent No. 2,618,325 to Seitz (“Seitz”) (cited by applicant) and U.S. Patent No. 3,850,571 to Zink et al. (“Zink”) (cited by applicant).

The ‘477 patent in view of Sommers teach all the limitations of claims 2, 3, 5, and 28-54 except for the specific structure of the burner tip and relation to a central fuel tube.

Seitz and Zink et al. each teach a burner apparatus in the same field of endeavor as the ‘477 patent. Each reference includes a burner tip, wherein a central fuel tube extends through the

Art Unit: 3749

tip and the tip may be adjusted to produce flames of varying shapes and characteristics, such as round and flat (see Seitz, Figs. 11 and 12) or cylindrical (see Zink et al., Figs. 8-10).

Therefore, in regard to claims 2, 3, 5, and 28-54, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the burner of the '477 patent to incorporate the burner tips of Seitz and Zink et al. for the purpose of obtaining flames shapes of desired stability, length, and diameter based on desired application (see Seitz, col. 1, line 38 through col. 2, line 35 and Zink et al., col. 1, lines 10-55).

### *Response to Arguments*

6. Applicant's arguments filed 1/23/2006 have been fully considered but they are not persuasive. Applicant's sole argument is that applicant's invention is distinguished from the prior art through the use of a fuel and air mixed feed stream that is "ultra fuel lean." This argument is not persuasive. While the '477 patent does not go into detail as to the air/fuel ratio of the stream provided in that reference, Sommers makes it very clear that in a burner in the same field of endeavor as both applicant's invention and the '477 patent the use of a feed stream that includes excess air, and is thus fuel lean, provides the distinct benefit of reducing the NOx content of the combustion products of the burner (see Sommers, at least last 4 lines of the abstract and col. 3, lines 32-37). The examiner notes that is the identical reason provided by applicant's invention (e.g. see applicant's specification, paragraph spanning pp. 21 and 22). Applicant alleges that his specification purports to specifically define "ultra fuel lean" to be beyond that described in Sommers (see response, p. 11, identifying p. 21 of the specification). However, the description of "ultra fuel lean" provided in applicant's specification does not

Art Unit: 3749

describe any specific definition of “ultra fuel lean” and instead provides only that the gas to air ratio may just above the lower combustion limits.

Turning to Sommers, this reference specifically provides that the feed stream provided to his burner is “super-stoichiometric” and that the total air provided, and thus the ratio of air to fuel, is adjustable (see at least col. 4, lines 66-68). It is well settled that during the course of patent examination claims are to be given their broadest reasonable interpretation consistent with the underlying specification without reading limitations from the specification into the claims. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). As applicant’s specification does not define “ultra fuel lean” to have any precise definition, within the broadest reasonable interpretation of this term would be its ordinary and customary meaning attributed to it by one of ordinary skill in the art. See MPEP 2111.01. The ordinary meaning of claim terms may be established by dictionary definitions. *CCS Fitness Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366, 62 USPQ2d 1658, 1662 (Fed. Cir. 2002).

The term “ultra” is defined in Merriam Webster’s Collegiate Dictionary, Tenth Edition (1996) as “beyond what is ordinary, proper or moderate: excessively: extremely.” A person of ordinary skill in the art would properly regard the “super-stoichiometric” mixture of Sommers to at least be “beyond what is... moderate” and is properly considered the ultra fuel lean mixture recited.

As noted above, Sommers expressly recognizes that the air coefficient, which is understood to be the ratio amount of combustion air provided to the theoretical air necessary, is adjustable (see at least col. 4, lines 66-68) based, at least in part, on the caloric value of the fuel employed. A person of ordinary skill in the art would reasonably consider that in order to

achieve optimum combustion and utilization of the heat content of the fuel while minimizing NOx production (see Sommers, col. 2, lines 31-39) a person of ordinary skill would select an appropriate amount of excess combustion air to produce a feed stream that is sufficiently fuel lean to be considered the “ultra fuel lean” as recited in applicant’s claims.

Applicant has not argued against the rejections applied on the basis of the secondary teachings of Seitz and Zink. Therefore, these reference are considered to properly show that for which they have been cited.

Accordingly, applicant’s claims do not distinguish applicant’s invention over the prior art of record.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.




Art Unit: 3749

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Josiah Cocks whose telephone number is (571) 272-4874. The examiner can normally be reached on weekdays from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at (571) 272-4828. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcc  
March 28, 2006

  
JOSIAH COCKS  
PRIMARY EXAMINER  
ART UNIT 3749